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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,336	04/09/2004	Thomas Francis Murphy	135082 (17851-88)	9993
7590	12/14/2005		EXAMINER	
John S. Beulick Armstrong Teasdale LLP One Metropolitan Square, Suite 2600 St. Louis, MO 63102			MILLER, ROSE MARY	
			ART UNIT	PAPER NUMBER
			2856	

DATE MAILED: 12/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

**Office Action Summary**

Application No.

10/821,336

Applicant(s)

MURPHY ET AL.

Examiner

Rose M. Miller

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 April 2004 and 11 October 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-13, 16-18 and 21-23 is/are rejected.
- 7) ☒ Claim(s) 5, 6, 14, 15, 19 and 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>4/9/04, 10/11/05</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Objections*

1. Claim 23 is objected to because of the following informalities: It has a misspelling in the body of the claim. It appears the word "geneator" should be --generator--. Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claims 7, 16, and 21 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the location of the first and second position encoders such that they can provide the positioning on the first and second axes.

### *Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1 and 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by **Brown et al. (GB 1,554,721)**.

With regards to claims 1 and 8-10, **Brown et al.** discloses at least two base members (part of base 1) spaced apart from each other (see Figure 1), a support arm mounted to each said base member (see Figure 1), a linear track extending between and supported by said support arms (69, 70), said track comprising a first side and a second side (see Figure 7), a transport member (55) coupled to said linear track (see Figure 7), said transport member movable along said linear track; a transducer support arm (10) pivotably coupled to said transport member (through 7 and 8) and a transducer assembly (see Figures 2 and 3) coupled to said transport support arm.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 2-4, 7, 11-13, 16-18 and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Brown et al.** in view of **Dykes et al. (US 5,710,378)**.

With regards to claim 2, **Brown et al.** discloses the claimed invention with the exception of the transport member comprises a spur gear and said linear track comprises a rack, said spur gear configured to operationally couple to said rack to move said transport member along.

**Dykes et al.** teaches at column 6 lines 9-26 moving a carriage by along a track by driving a stepper motor to operate a pinion gear (sun gear), the teeth of the pinion gear meshing with a flexible toothed belt. The flexible toothed belt is anchored at opposite ends of the track to allow for movement of the carriage along the track.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of **Brown et al.** to include a sun gear and associated track for the disclosed track along which the transport member rides as **Dykes et al.** teaches the stability and flexibility of utilizing a sun gear and associated track for moving a carriage in a desired direction when utilizing an ultrasonic test head attached to the carriage.

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With regards to claim 3, **Dykes et al.** teaches adding further stability to the movement of the carriage by providing a plurality of guide rollers positioned to engage first and second sides of said track (see Figures 6A, 6B, and 6C).

With regards to claim 4, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the system of **Brown et al.** with a plurality of track sections for the linear track if the distance the carriage was travel was greater than what one track would allow as the duplication of parts for a multiplied effect (in this case a farther distance to travel) is well within the scope of one of ordinary skill in the art and is not considered a patentable invention. See St. Regis Paper Co. v. Bemis Co., Inc., 193 USPQ 8, 11 (7<sup>th</sup> Cir. 1977).

With regards to claim 7, **Brown et al.** clearly teaches utilizing ultrasonic transducers as the first and second position encoders to determine the location of the test head with respect to two or more axes (see page 3, line 110 – page 4, line 87 and Figure 4).

With regards to claim 11, **Brown et al.** discloses the claimed invention with the exception of the transport member comprises a spur gear and said linear track comprises a rack, said spur gear configured to operationally couple to said rack to move said transport member along.

**Dykes et al.** teaches at column 6 lines 9-26 moving a carriage by along a track by driving a stepper motor to operate a pinion gear (sun gear), the teeth of the pinion gear meshing with a flexible toothed belt. The flexible toothed belt is anchored at opposite ends of the track to allow for movement of the carriage along the track.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of **Brown et al.** to include a sun gear and associated track for the disclosed track along which the transport member rides as **Dykes et al.** teaches the stability and flexibility of utilizing a sun gear and associated track for moving a carriage in a desired direction when utilizing an ultrasonic test head attached to the carriage.

With regards to claim 12, **Dykes et al.** teaches adding further stability to the movement of the carriage by providing a plurality of guide rollers positioned to engage first and second sides of said track (see Figures 6A, 6B, and 6C).

With regards to claim 13, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the system of **Brown et al.** with a plurality of track sections for the linear track if the distance the carriage was travel was greater than what one

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track would allow as the duplication of parts for a multiplied effect (in this case a farther distance to travel) is well within the scope of one of ordinary skill in the art and is not considered a patentable invention. See St. Regis Paper Co. v. Bemis Co., Inc., 193 USPQ 8, 11 (7<sup>th</sup> Cir. 1977).

With regards to claim 16, **Brown et al.** clearly teaches utilizing ultrasonic transducers as the first and second position encoders to determine the location of the test head with respect to two or more axes (see page 3, line 110 – page 4, line 87 and Figure 4).

With regards to claims 17 and 22-23, **Brown et al.** teaches the claimed invention with the exception of testing a metal article with the inspection apparatus disclosed, the metal object being a forging, the forging being a component of a gas turbine, a steam turbine, or a generator.

**Dykes et al.** teaches that ultrasonics is a well known and often utilized tool for inspecting jet pumps and other forged items for cracks or other defects. **Dykes et al.** also teaches that manipulator for orientating the ultrasonic and/or eddy current tester is the best means of placing the test head in the proper location at the necessary orientation to perform the desired test.

Therefore, it would have been obvious to one of ordinary skill in the art to utilize the system of **Brown et al.** to test a metal article such as a forging, turbine, or generator as the system of **Brown et al.** would work equally well with either a live object or inanimate object to scan and test and **Dykes et al.** clearly teaches that a manipulator is the best way to place a transducer in a desired location when dealing with an inanimate object with a intricate shape.

With regards to claim 18, **Brown et al.** discloses the claimed invention with the exception of the transport member comprises a plurality of guide rollers and a spur gear, said linear track comprises a rack, said spur gear configured to operationally couple to said rack to move said transport member along.

**Dykes et al.** teaches at column 6 lines 9-26 moving a carriage by along a track by driving a stepper motor to operate a pinion gear (sun gear), the teeth of the pinion gear meshing with a flexible toothed belt. The flexible toothed belt is anchored at opposite ends of the track to allow for movement of the carriage along the track. **Dykes et al.** teaches adding further stability to the movement of the carriage by providing a plurality of guide rollers positioned to engage first and second sides of said track (see Figures 6A, 6B, and 6C).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of **Brown et al.** to include the guide roller, sun gear, and associated track for the disclosed track along which the transport member rides as **Dykes**

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**et al.** teaches the stability and flexibility of utilizing guide rollers, sun gear, and associated track for moving a carriage in a desired direction when utilizing an ultrasonic test head attached to the carriage.

***Allowable Subject Matter***

9. Claims 5-6, 14-15, and 19-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Claim 21 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record fails to teach and/or suggest an inspection system comprising, in combination with the other recited elements, a transducer assembly comprising an attachment member coupled to a first end of the transducer support arm; a support wheel coupled to a second end of said attachment member; a link arm coupled to said second end of said attachment member; at least one transducer holder coupled to said link arm; and at least one of an ultrasonic transducer and an eddy current transducer mounting in each said transducer holder.

***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

**May (US 3,678,736)** discloses a machine with improved operating head traversing workpieces with curved surfaces.

**Moore (US 6,792,809 B1)** discloses a self-aligning turbine disc inspection apparatus.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rose M. Miller whose telephone number is 571-272-2199. The examiner can normally be reached on Monday - Friday, 7:30 am to 3:30 pm.

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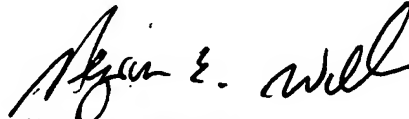
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on 571-272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



RMM

11 December 2005



HEZRON WILLIAMS  
SUPERVISORY PATENT EXAMINER  
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